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REMARKS

Claims 1-24 are all the claims presently pending in the application. Claim 6 is

amended to more clearly define the invention. Claims 1, 4-5, 8-9, 12, and 19 are

independent.

These amendments are made only to more particularly point out the invention for the

Examiner and not for narrowing the scope of the claims or for any reason related to a

statutory requirement for patentability.

Applicants also note that, notwithstanding any claim amendments herein or later

during prosecution, Applicants' intent is to encompass equivalents of all claim elements.

Entry of this §1.116 Amendment is proper. Since the Amendments above narrow the

issues for appeal and since such features and their distinctions over the prior art of record

were discussed earlier, such amendments do not raise a new issue requiring a further search

and/or consideration by the Examiner. As such, entry of this Amendment is believed proper

and Applicants earnestly solicit entry. No new matter has been added.

Applicants gratefully acknowledge that claims 4, 8, and 12-18 are allowed and that

claims 2-3, 6-7, 10-11, and 22-24 would be allowable if rewritten in independent form

including all of the limitations of the base claim and any intervening claims. However,

Applicants respectfully submit that all of the claims are allowable.

Claims 1, 5, 9, and 19-21 stand rejected under 35 U.S.C. § 103(a) as being

unpatentable over the Ogawa reference in view of the Zhang et al. reference.

This rejection is respectfully traversed in the following discussion.

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I.   THE CLAIMED INVENTION

An exemplary embodiment of the claimed invention, as defined by, for example,

independent claim 1, is directed to a power-saving task processing system that includes a

remaining power detector for detecting a remaining power of a battery. The remaining power

detector outputs a detection result about a value or state of the remaining power of the battery.

The system further includes a motion information-storage for storing a motion information

table. The motion information table defines a relationship between values or states of the

remaining power of the battery on execution of a task and a plurality of processes for each

task. Each of the plurality of processes corresponds to a different value or state of the

remaining power of the battery and for which complete execution is ensured at the respective

values or states of the remaining power of the battery. The system further includes a task

controller for controlling execution of tasks to be executed. When the task controller

executes a task, the task controller chooses and executes one of the plurality of processes

from the motion information table according to the detection result of the remaining power

detector.

Conventional battery powered robots are required to complete an assigned (instructed)

task. However, these conventional robots may not be able to complete an assigned task

because the remaining amount of battery power is insufficient to complete the assigned task.

If one of these conventional battery powered robots is unable to complete an assigned

task, a serious malfunction may be caused. For example, incomplete execution of a task may

lead to a halt of a manufacturing line and/or generation of defective products.

To address this problem, some conventional battery powered robots determine the

amount of remaining battery power and then determine whether sufficient battery power

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remains for an instructed task. If there is insufficient battery power, these conventional robots

do not execute the instructed task.

Further, these conventional battery powered robots may suddenly stop executing a

series of tasks if there is not enough battery power to complete any one of the tasks. Thus,

the remaining battery power is not efficiently used.

In stark contrast to these conventional systems, the present invention provides a

power-saving task processing system that provides <u>a motion information table</u> having <u>a

plurality of processes for each task, where each of the plurality of processes corresponds to a

different amount of remaining battery power</u>. In this manner, a task controller may select

from a plurality of processes for an assigned task based upon the amount of remaining battery

power and, therefore, avoid sudden stops of execution of tasks, allow a user to feel

continuous operation of a battery-powered apparatus (e.g., a robot) without inducing a feeling

of wrongness in the user, extend the actual useable or available period that the battery-

powered apparatus is available for completing tasks between charging, and reduce the amount

of power that is consumed for a given number of executed tasks. (Page 6, line 22 - page 7,

line 20).

II.   THE PRIOR ART REJECTION

The Examiner alleges that the Zhang et al. reference would have been combined with

the Ogawa reference to form the claimed invention. Applicants submit, however, that these

references <u>would not</u> have been combined and even if combined, the combination <u>would not</u>

teach or suggest each and every element of the claimed invention.

Applicants submit that the combination <u>would not</u> teach or suggest each and every

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element of the claimed invention.

   None of the applied references teaches or suggests the features of the claimed

invention including a motion information table and a task controller that chooses and

executes one of the plurality of processes stored in the motion information table when the

task controller executes a task. As explained above, these features are important for selecting

from a plurality of processes for an assigned task based upon the amount of remaining battery

power and, therefore, avoiding sudden stops of execution of tasks, allowing a user to feel

continuous operation of a battery-powered apparatus (e.g., a robot) without inducing a feeling

of wrongness in the user, extending the actual useable or available period that the battery-

powered apparatus is available for completing tasks between charging, and reducing the

amount of power that is consumed for a given number of executed tasks.

   The Examiner acknowledges that the Ogawa reference "is silent in teaching a motion

information-storage for storing a motion information table."

   The Examiner then alleges that the Zhang et al. reference teaches a motion

information-storage for storing a motion information table.

   However, contrary to the Examiner's allegation the Zhang et al. reference does not

teach or suggest a motion information-storage for storing a motion information table.

   Indeed, the Examiner does not point out where in the Zhang et al. reference that the

Examiner alleges that such a motion information table may be found.

   Rather, the Examiner merely points out that the Zhang et al. reference discloses a

program bank 31 that stores a plurality of interpolation programs and a program switching

section 32 that may select between the plurality of interpolation programs based upon power

consumption requirements.

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The Examiner's alleged significance of the Zhang et al. reference is murky, at best, as the Office Action <u>did not</u> explain the pertinence of this reference to the <u>specific elements</u> which are recited by the claims being rejected, as required by M.P.E.P. § 707.5.

Rather, the Examiner merely states that the Zhang et al. reference discloses a program bank 31 that stores a <u>plurality of interpolation programs</u> and a program switching section 32 that may select between the plurality of interpolation programs based upon power consumption requirements. The Examiner's statement completely fails to address the features of the invention which are <u>recited by the claims</u>.

The Examiner's rejection also fails to comply with 37 C.F.R. §1.104(c)(2) which requires that:

"... *the particular part relied on must be designated as nearly as*

practicable. The pertinence of each reference, if not apparent, must be clearly

explained and each rejected claim specified."

In this case, not only has the Examiner failed to cite the <u>particular portion</u> of the Zhang et al. reference which may have been relied upon, but the Examiner has also failed to clearly explain the pertinence of the Zhang et al. reference to each rejected claim.

To assist Applicants' understanding, Applicants hereby respectfully request that the Examiner comply with the requirements of M.P.E.P. § 707.5 by explaining in detail the correspondence between the <u>specific features</u> recited by claims 1, 5, 9, and 19-21 and the <u>particular portions</u> of the Zhang et al. reference.

Note that MPEP 707.05 states:

"*During the examination of an application or reexamination of*

a patent, the examiner should cite appropriate prior art which is

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> *nearest to the subject matter defined in the claims. When such prior art*
>
> *is cited, its pertinence should be explained"*

To further the prosecution of this application, however, Applicants have closely

reviewed the Zhang et al. reference to address the <u>clear differences</u> between the Zhang et al.

reference and the claims.

Much like the Ogawa reference, the Zhang et al. reference <u>does not</u> teach or suggest

anything at all regarding any <u>motion information table</u> at all, let alone a motion information

table <u>that defines a relationship between valued or states of the remaining power of a battery</u>

<u>on execution of a task and a plurality of processes for a task,</u> or a motion information table

<u>storing a plurality of processes that correspond to different values or states of the remaining</u>

<u>power of a batter and for which complete execution is ensured.</u>

Rather, the Zhang et al. reference discloses a program bank 31 that include tables for

each of a plurality of <u>image processing functions</u>, such as interpolation and/or convolution

processes. None of the tables that are used for these functions <u>define a relationship between</u>

<u>valued or states of the remaining power of a battery on execution of a task and a plurality of</u>

<u>processes for a task.</u>

Indeed, the interpolation and/or convolution tables that are disclosed by the Zhang et

al. reference have <u>absolutely nothing</u> to do with a <u>plurality of processes,</u> let alone defining a

<u>relationship between valued or states of the remaining power of a battery on execution of a</u>

<u>task and a plurality of processes for a task</u>

Clearly, the Zhang et al. reference <u>does not</u> remedy the deficiencies of the Ogawa

reference.

Additionally, contrary to the Examiner's allegations, the Ogawa reference <u>does not</u>

teach or suggest a task controller that chooses and executes one of the plurality of processes

stored in the motion information table when the task controller executes a task

Rather, and in stark contrast, the Ogawa reference discloses a battery check device

that constantly monitors the battery voltage levels and gradually inactivates auxiliary devices

as the battery voltage level decreases. The Ogawa reference explains that a controller 3

"executes an operational process to prohibit the activation of multiple devices in a specified

order as the remaining capacity of the battery 9 decreases." (Col. 3, lines 41-45).

The Ogawa reference discloses performing a battery check in accordance with the

flowchart illustrated in Figure 2 to gradually prohibit activation of devices.

The Ogawa reference does not teach or suggest a task controller that chooses and

executes one of a plurality of processes stored when the task controller executes a task.

Rather, the Ogawa reference discloses constantly monitoring the battery and inhibiting

operation of devices as the battery voltage level decreases, not when a task controller

executes a task as claimed.

Further, in stark contrast to the present invention, the Ogawa reference takes a device-

oriented approach to conserving battery power, rather, than the process-oriented approach that

is taken by the present invention.

Therefore, the Ogawa reference does not teach or suggest a plurality of processes

corresponding to a different value or state of the remaining power of the battery.

Rather, the Ogawa reference discloses varying levels of device inhibition that

correspond to different values or states of remaining battery power and does not teach or

suggest anything at all regarding processes, let alone a plurality of processes that each

correspond to a different value or state of remaining battery power.

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Additionally, Applicant submits that these references would not have been combined as alleged by the Examiner. Indeed, the references are directed to completely different matters and problems.

Specifically, the Ogawa reference is concerned with solving the problem of cameras which inhibit operation of all devices when a battery level drops below a threshold. (Col. 1, lines 24-55).

In stark contrast, the Zhang et al. reference is concerned with the completely different and unrelated problem of image processing of luminance signals and chrominance signals using different interpolation techniques. (Col. 1, lines 6-11).

One of ordinary skill in the art who was concerned with solving the problem of cameras which inhibit operation of all devices when a battery level drops below a threshold as the Ogawa reference is concerned would not have referred to the Zhang et al. reference, and vice-versa, because the Zhang et al. reference is concerned with the completely different and unrelated problem of image processing of luminance signals and chrominance signals using different interpolation techniques. Thus, the references would not have been combined.

Further, Applicant submits that, contrary to the Examiner's allegation, one of ordinary skill in the art would not have been motivated to modify the device inhibition device that is disclosed by the Ogawa reference to include the program bank 31 that is disclosed by the Zhang et al. reference "to seamlessly switching (sic) from one process to another according to the state of the battery when a task is executed."

Indeed, it is not entirely clear how the device disclosed by the Ogawa reference would operate if it included the program bank that is disclosed by the Zhang et al. reference.

As explained above, the Ogawa reference discloses monitoring the battery level and

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gradually inhibiting additional devices as the battery level decreases. It is not clear, how

including a program bank of interpolation and/or convolution tables would have any affect

upon the device inhibition levels (i.e., the number of devices that are inhibited).

Clearly, the device that is disclosed by the Ogawa reference operates based upon a

completely different principle of operation than the device that is disclosed by the Zhang et al.

reference.

Thus, contrary to the Examiner's allegation, one of ordinary skill in the art would not

have been motivated to modify the device that is disclosed by the Ogawa reference to include

the program bank of interpolation and/or convolution tables that is disclosed by the Zhang et

al. reference because such a modification would change the principle of operation of the

Ogawa reference.

M.P.E.P. § 2143.01 states:

> "If the proposed modification or combination of the prior art would
>
> change the principal of operation of the prior art invention being modified,
>
> then the teachings of the references are not sufficient to render the claims
>
> prima facie obvious." (Emphasis added).

Clearly, one of ordinary skill in the art would not have been motivated to modify the

device that is disclosed by the Ogawa reference to include the program bank of interpolation

and/or convolution tables that is disclosed by the Zhang et al. reference because such a

modification would change the principle of operation of the Ogawa reference.

Therefore, the Examiner is respectfully requested to withdraw the rejection of claims

1, 5, 9, and 19-21.

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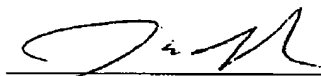
III.   FORMAL MATTERS AND CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully submit that

claims 1-24, all the claims presently pending in the Application, are patentably distinct over

the prior art of record and are in condition for allowance. The Examiner is respectfully

requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the Application to be other than in condition for allowance,

the Examiner is requested to contact the undersigned at the local telephone number listed

below to discuss any other changes deemed necessary in a <u>telephonic or personal interview</u>.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit

any overpayment in fees to Attorney's Deposit Account No. 50-0481.

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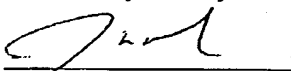
Respectfully Submitted,

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<u>CERTIFICATION OF FACSIMILE TRANSMISSION</u>

I hereby certify that I am filing this Amendment Under 37 CFR §1.116 by facsimile
with the United States Patent and Trademark Office to Examiner Vincent Huy Tran, Group
Art Unit 2115 at fax number (703) 872-9306 this 7th day of July, 2005.

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